

Claims

1. A commutator for an electric machine, comprising a support member (1, 1'') made from insulating molding compound, a plurality of metal conductor segments (3, 3''), disposed thereon in evenly spaced manner around the commutator axis (2), with terminal elements disposed thereon for a rotor winding, and an interference-suppression device (9, 9', 9''), to which the conductor segments (3, 3'') are connected in electrically conductive manner, characterized in that
the interference-suppression device (9, 9', 9'') comprises a number, corresponding to the number of conductor segments (3, 3''), of individual interference-suppression elements (10, 10', 10'') disposed around the commutator axis (2), and an equally large number of contact bridges (11, 11', 11''), each of which connects two mutually adjacent interference-suppression elements (10, 10', 10'') to one another in electrically conductive manner, each contact bridge (11, 11', 11'') being provided with two inwardly directed legs (20, 20'), which are flexible relative to one another in circumferential direction and are connected to the two associated interference-suppression elements in electrically conductive manner, and with one outwardly directed foot portion (21, 21'), which is connected to the associated conductor segment in electrically conductive manner.
2. A commutator according to claim 1, characterized in that
the interference-suppression elements (10, 10', 10'') are constructed as parallelepiped multi-layer capacitors.

3. A commutator according to claim 1 or claim 2,
characterized in that
the interference-suppression elements (10, 10', 10'') are disposed around the commutator
axis (2) in a manner equally spaced along the edges of a regular polygon.

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4. A commutator according to one of claims 1 to 3,
characterized in that
each interference-suppression element (10, 10', 10'') is inserted into a seat (14, 14', 14'')
of the support member (1, 1'') that defines the location of the interference-suppression
10 element in question in radial direction and in circumferential direction.

5. A commutator according to claim 4,
characterized in that
each seat (14, 14', 14'') is bounded in radially inward and circumferential direction by a
15 ribbed ring (17, 17'') and in radially outward direction by molding-compound projections
(18, 18'') of the support member (1, 1'').

6. A commutator according to claim 4 or claim 5,
characterized in that
20 the seats (14, 14', 14'') for the interference-suppression elements (10, 10', 10'') are
connected to one another by installation spaces (24, 24', 24'') for the contact bridges (11,
11', 11'').

7. A commutator according to one of claims 1 to 6,

characterized in that

the contact bridges (11) are each disposed spatially between two mutually adjacent interference-suppression elements (10) and are connected to the associated interference-suppression elements in the region of contact poles (13) at the ends thereof.

8. A commutator according to claim 7,

characterized in that

the contact bridges (11) are made of a bent metal strip.

9. A commutator according to one of claims 1 to 6,

characterized in that

the contact bridges (11', 11'') are disposed in a plane axially offset relative to the interference-suppression elements (10', 10'') and are connected to the associated interference-suppression elements in the region of laterally disposed contact faces (25).

10. A commutator according to claim 9,

characterized in that

the contact bridges (11', 11'') are substantially horseshoe-shaped and are made of plane metal flat stock, in particular by being punched out of a sheet.

11. A commutator according to one of claims 1 to 10,

characterized in that

the contact bridges (11, 11', 11'') are soldered or adhesively bonded in the region of their leg (20, 20') to the associated interference-suppression elements (10, 10', 10'').

12. A commutator according to one of claims 1 to 11,

5 characterized in that

the contact bridges (11, 11', 11'') are made of copper, brass or an alloy containing these metals.

13. A commutator according to one of claims 1 to 12,

10 characterized in that

the contact bridges (11, 11', 11'') are provided with a coating of silver or tin, at least in zones.

14. A commutator according to one of claims 1 to 13,

15 characterized in that

the conductor segments (3, 3'') are provided on their radial insides with recesses (27), in which the foot portions (21') of the contact bridges (11', 11'') engage.

15. A commutator according to one of claims 1 to 14,

20 characterized in that

the contact bridges (11, 11', 11'') are soldered or adhesively bonded in the region of their foot portions (21, 21', 21'') to the associated conductor segments (3, 3'').

16. A commutator according to one of claims 1 to 15,
characterized in that
it is constructed as a drum commutator with a cylindrical brush running surface (4).
- 5 17. A commutator according to claim 16,
characterized in that
the brush running surface (4) is extended in axial direction beyond the interference-
suppression device (9, 9'), the radial thickness of the conductor segments (3) under the
brush running surface (4) being greater than 0.5 mm even in the region of the
10 interference-suppression device (9, 9').
18. A commutator according to claim 16 or claim 17,
characterized in that
the interference-suppression device (9, 9') is disposed at the end face of the commutator
15 opposite the terminal elements (7) for the rotor winding.
19. A commutator according to one of claims 1 to 15,
characterized in that
it is constructed as a flat commutator with a plane brush running surface (4''), wherein the
20 interference-suppression device (9'') is disposed at the end face of the commutator remote
from the brush running surface.
20. A method for manufacturing a commutator according to claim 1, comprising the

following steps:

manufacturing a commutator blank, provided with the support member (1, 1'') and the conductor segments (3, 3''), and having seats (14, 14', 14'') disposed in the end faces of the support member to accommodate the interference-suppression elements (10, 10', 10'');
5 10'');

manufacturing a plurality of interference-suppression elements (10, 10', 10'');

manufacturing a number, corresponding to the number of interference-suppression elements, of contact bridges (11, 11', 11''), each of which is provided with two legs (20, 20') that are flexible relative to one another and with a foot portion (21, 21');

10 inserting the interference-suppression elements (10, 10', 10'') into the seats (14, 14', 14'') of the support member (1, 1'');

attaching the contact bridges (11, 11', 11'') in such a way that they each connect two mutually adjacent interference-suppression elements (10, 10', 10'') and one conductor segment (3, 3'') in electrically conductive manner, by virtue of being soldered or

15 adhesively bonded in the region of their leg (20, 20') to the two associated interference-suppression elements (10, 10', 10'') and in the region of their foot portion (21, 21') to the associated conductor segment (3, 3'').

21. A method according to claim 20,

20 characterized in that

solder or adhesive is applied onto the contact bridges (11, 11', 11''), in the region of their subsequent electrically conductive connections to the interference-suppression elements (10, 10', 10'') and to the conductor segments (3, 3''), before they are attached.

22. A method according to claim 20 or claim 21,

characterized in that

the contact bridges (11', 11'') are manufactured by being punched out of a plane sheet
5 strip.

23. A method according to claim 22,

characterized in that

the configuration of the contact bridges (11', 11'') during punching corresponds to their

10 configuration in the commutator to be manufactured, the contact bridges (11', 11'') being
pressed back into the sheet strip after they have been punched out of it, and are mounted
together by being pressed out of the sheet strip onto the commutator blank, after the
interference-suppression elements (10', 10'') have been inserted into the seats (14', 14'').

15 24. A method according to claim 23 and claim 21,

characterized in that

the solder or adhesive is applied onto the contact bridges (11, 11', 11'') after they have
been pressed back into the sheet strips.

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